

## IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:	§	Serial No:	To Be Assigned
Richard E. Smalley et al.	§		(division of application
	§		Serial No. 09/380,545)
For: CARBON FIBERS FORMED FROM	§		
SINGLE-WALL CARBON	§	Filed: CONCURRENTLY HEREWITH	
NANOTUBES	§		
	§	Group Art Unit: 1754 (anticipated)	
	§		
Atty Dkt: 11321-P012USD1	§	Prior Examiner: Stuart Henderson	
	§	703.308.2539	

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<u>December 28, 2001</u> Date	 Signature
	<u>Gracie Segovia</u> Printed Name

**PRELIMINARY AMENDMENT ACCOMPANYING REQUEST FOR FILING  
DIVISIONAL APPLICATION UNDER 37 C.F.R. § 1.53(b)**

Sir:

This paper accompanies a Request for Filing Divisional Application Under 37 C.F.R. § 1.53(b) and associated filing fee therefor ("the Request"). If the fee payment is missing or insufficient in amount, or if any other fees are determined to be due, the Assistant Commissioner, Commissioner, and/or the Director of the U.S. Patent & Trademark Office is/are hereby authorized to charge any such fees (or credit any overpayment) to Winstead Sechrest & Minick Deposit Account No. 23-2426, referencing matter number 11321-P012USD1.

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## AMENDMENTS

### In the Title

Please amend the title by replacing the present title with the following:

--METHOD FOR PURIFICATION OF AS-PRODUCED SINGLE-WALL CARBON NANOTUBES--

### In the Abstract

Please amend the abstract by replacing the present abstract with the following:

--This invention relates generally to a single-wall carbon nanotube (SWNT) purification process and more particularly to a purification process that comprises heating the SWNT-containing felt under oxidizing conditions to remove the amorphous carbon deposits and other contaminating materials. In a preferred mode of this purification procedure, the felt is heated in an aqueous solution of an inorganic oxidant, such as nitric acid, a mixture of hydrogen peroxide and sulfuric acid, or a potassium permanganate. Preferably, SWNT-containing felts are refluxed in an aqueous solution of an oxidizing acid at a concentration high enough to etch away amorphous carbon deposits within a practical time frame, but not so high that the single-wall carbon nanotube material will be etched to a significant degree. When material having a high proportion of SWNT is purified, the preparation produced will be enriched in single-wall nanotubes, so that the SWNT are substantially free of other material.--

### In the Specification

Please amend the specification as noted on page 5, paragraph 11 of the Request by inserting before the first line of the specification the following:

### --RELATED APPLICATIONS

This application is a division of co-pending prior U.S. patent application Serial No. 09/380,545, filed on September 3, 1999, entitled "CARBON FIBERS FORMED FROM

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SINGLE-WALL CARBON NANOTUBES,” which is the 35 U.S.C. § 371 national application of International Application Number PCT/US98/04513 filed on March 6, 1998, which designated the United States, claiming priority to: provisional U.S. patent application Serial Number 60/067,325, filed on December 5, 1997; provisional U.S. patent application Serial Number 60/064,531, filed on November 5, 1997; provisional U.S. patent application Serial Number 60/063,675, filed on October 29, 1997; provisional U.S. patent application Serial Number 60/055,037, filed on August 8, 1997; provisional U.S. patent application Serial Number 60/047,854, filed on May 29, 1997; and provisional U.S. patent application Serial Number 60/040,152, filed on March 7, 1997. Each of the foregoing applications is commonly assigned to the assignee of the present invention and is hereby incorporated herein by reference in its entirety.

This application discloses subject matter related to the subject matter of U.S. patent application Serial Number 10/000,746, filed on November 30, 2001 in the name of Daniel T. Colbert et al., entitled “MACROSCOPICALLY MANIPULABLE NANOSCALE DEVICES MADE FROM NANOTUBE ASSEMBLIES,” which application is commonly assigned to the assignee of the present invention.--

### **In the Claims**

Please amend the claims as follows:

- A. Please cancel claims 18-162 without prejudice or disclaimer to the subject matter thereof.
- B. Please amend claim 1 as follows:
  1. (Amended) A method for purifying a mixture comprising single-wall carbon nanotubes and amorphous carbon contaminate, said method comprising the steps of:
    - (a) heating said mixture under oxidizing conditions sufficient to remove the said amorphous carbon; and

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- (b) recovering a product comprising at least about 80% by weight of single-wall carbon nanotubes, wherein the product is washed with a solution comprising a surfactant.

C. Please add the following new claims 163-165:

- 163. (New) The method of claim 1 wherein the surfactant is sodium dodecyl sulfate.
- 164. (New) The method of claim 1 wherein the surfactant is a non-ionic surfactant.
- 165. (New) A method for purifying a mixture comprising single-wall carbon nanotubes and amorphous carbon contaminate, said method comprising the steps of:
  - (a) heating said mixture under oxidizing conditions; and
  - (b) recovering a product comprising at least about 80% by weight of single-wall carbon nanotubes, wherein the product comprises fullerene torroids.

#### REMARKS

A. *Status of the Application.* On September 3, 1999, Applicant filed the parent patent application, U.S. patent application Serial No. 09/380,545, which included originally filed claims 1-162. In an Office Action, dated June 20, 2000, ("the Office Action") the Examiner subjected the claims to a restriction requirement. According to the Office Action, the parent patent application's claims were directed to eleven (11) distinct inventions. Applicant elected the invention of Group VIII in the parent patent application. The present divisional application is directed to the invention of Group I, which were identified as the invention claimed by originally filed claims 1-17.

Accordingly, originally filed claims 1-17 remain in the application, and the other originally filed claims -- claims 18-162 -- are cancelled herein without prejudice or disclaimer to the subject matter thereof. Additionally, claims 163-165 have also been added herein. No new matter is added by the addition of these claims.

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B. *Amended Claim.* Claim 1 is amended herein. The Applicant respectfully asserts that the amendment to claim 1, and incorporated by reference in any claims depending therefrom, are not narrowing amendments made for a reason related to the statutory requirements for a patent that will give rise to prosecution history estoppel. *See Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co.*, 234 F.3d 555, 566, 56 U.S.P.Q.2d 1865, 1870 (Fed. Cir. 2001).


Attached hereto is a marked-up version of the changes made to claim 1 by the current amendment. The attached page is captioned "Version with Markings to Show Changes Made."

### CONCLUSION

It is believed that each of the claims now pending in the present application recites elements neither taught nor suggested by the prior art. Further, it is believed that the application as a whole is in proper form and condition for allowance. If the Examiner believes that the application may be placed in even better condition for allowance, he or she is invited to contact the undersigned at the telephone number noted below. Alternatively, or in addition, if the Examiner believes that an Examiner interview would be beneficial, the Examiner is invited to note that the undersigned has ready access to the videoconferencing facilities of the South Central Intellectual Property Partnership at Rice University in Houston, Texas. The inventors and the undersigned would welcome the opportunity to use those facilities to clarify any issues deemed to remain unresolved.

Respectfully submitted,

Date: December 28, 2001

  
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**Version with Markings to Show Changes Made**

1. (Amended) A method for purifying a mixture comprising single-wall carbon nanotubes and amorphous carbon contaminate, said method comprising the steps of:
  - (a) heating said mixture under oxidizing conditions sufficient to remove the said amorphous carbon; and
  - (b) recovering a product comprising at least about 80% by weight of single-wall carbon nanotubes, wherein the product is washed with a solution comprising a surfactant.

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